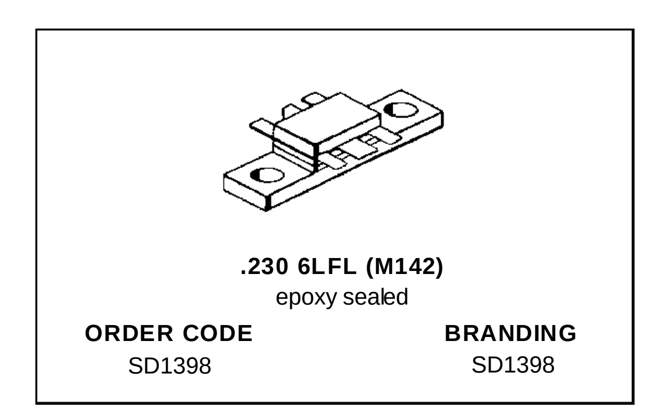


# SD1398

## RF & MICROWAVE TRANSISTORS
## 850-960 MHz APPLICATIONS

- 850 - 960 MHZ
- 24 VOLTS
- COMMON EMITTER
- OVERLAY GEOMETRY
- GOLD METALLIZATION
- $P_{OUT}$ = 6.0 W MIN. WITH 10.0 dB GAIN



**.230 6LFL (M142)**
epoxy sealed

| ORDER CODE | BRANDING |
|---|---|
| SD1398 | SD1398 |

**PIN CONNECTION**



1. Collector
2. Base
3. Emitter

### DESCRIPTION

The SD1398 is a gold metallized epitaxial silicon NPN transistor designed for high linearity Class AB operation cellular base station applications. The SD1398 can also be operated Class C.

The SD1398 is internally input matched and can be used as a driver for the SD1423 or SD1424.

### ABSOLUTE MAXIMUM RATINGS ($T_{case}$ = 25°C)

| Symbol | Parameter | Value | Unit |
|---|---|---|---|
| $V_{CBO}$ | Collector-Base Voltage | 50 | V |
| $V_{CES}$ | Collector-Emitter Voltage | 35 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 3.5 | V |
| $I_C$ | Device Current | 2.4 | A |
| $P_{DISS}$ | Power Dissipation | 53 | W |
| $T_J$ | Junction Temperature | +200 | °C |
| $T_{STG}$ | Storage Temperature | – 65 to +150 | °C |

### THERMAL DATA

| | | | |
|---|---|---|---|
| $R_{TH(j-c)}$ | Junction-Case Thermal Resistance | 3.3 | °C/W |

## ELECTRICAL SPECIFICATIONS ($T_{case}$ = 25°C)

STATIC

| Symbol | Test Conditions | | Value | | | Unit |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| $BV_{CBO}$ | $I_C$ = 5mA | $I_E$ = 0mA | 50 | — | — | V |
| $BV_{CEO}$ | $I_C$ = 5mA | $I_B$ = 0mA | 24 | — | — | V |
| $BV_{EBO}$ | $I_E$ = 5mA | $I_C$ = 0mA | 3.5 | — | — | V |
| $I_{CEO}$ | $V_{CE}$ = 24V | $I_E$ = 0mA | — | — | 1.0 | mA |
| $I_{CBO}$ | $V_{CB}$ = 24V | $I_E$ = 0mA | — | — | 1.0 | mA |
| $h_{FE}$ | $V_{CE}$ = 10V | $I_C$ = 0.1A | 20 | — | 100 | — |

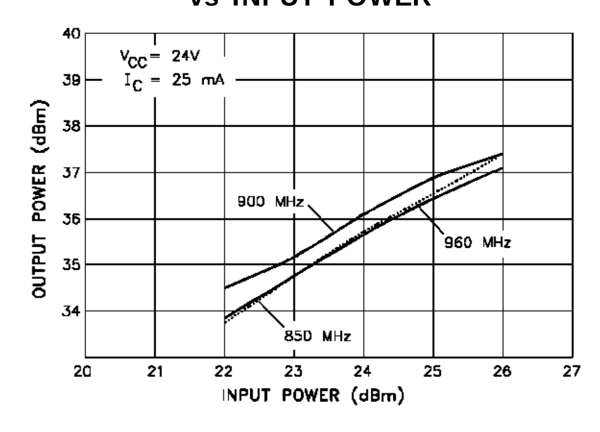
DYNAMIC

| Symbol | Test Conditions | | | Value | | | Unit |
|---|---|---|---|---|---|---|---|
| | | | | Min. | Typ. | Max. | |
| $P_{OUT}$ | f = 850 — 960 MHz | $V_{CE}$ = 24 V | $I_{CQ}$ = 25 mA | 6 | — | — | W |
| $\eta_c$ | f = 850 — 960 MHz | $V_{CE}$ = 24 V | $I_{CQ}$ = 25 mA | — | 50 | — | % |
| $G_P$ | f = 850 — 960 MHz | $V_{CE}$ = 24 V | $I_{CQ}$ = 25 mA | 10 | 12 | — | dB |
| $C_{OB}$ | f = 1 MHz | $V_{CB}$ = 24 V | | — | 7.5 | 8.5 | pF |

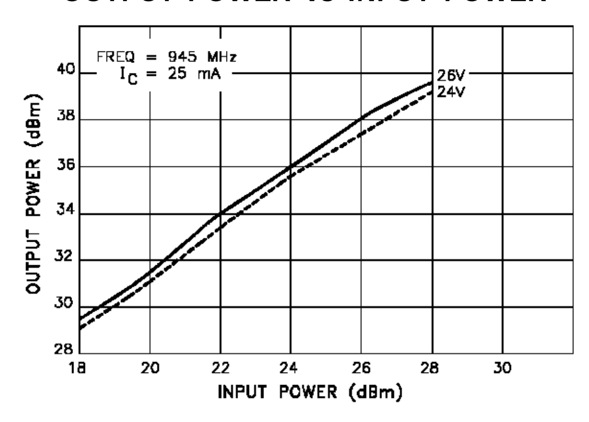
Note: $P_{IN}$ = 0.60w

## TYPICAL PERFORMANCE

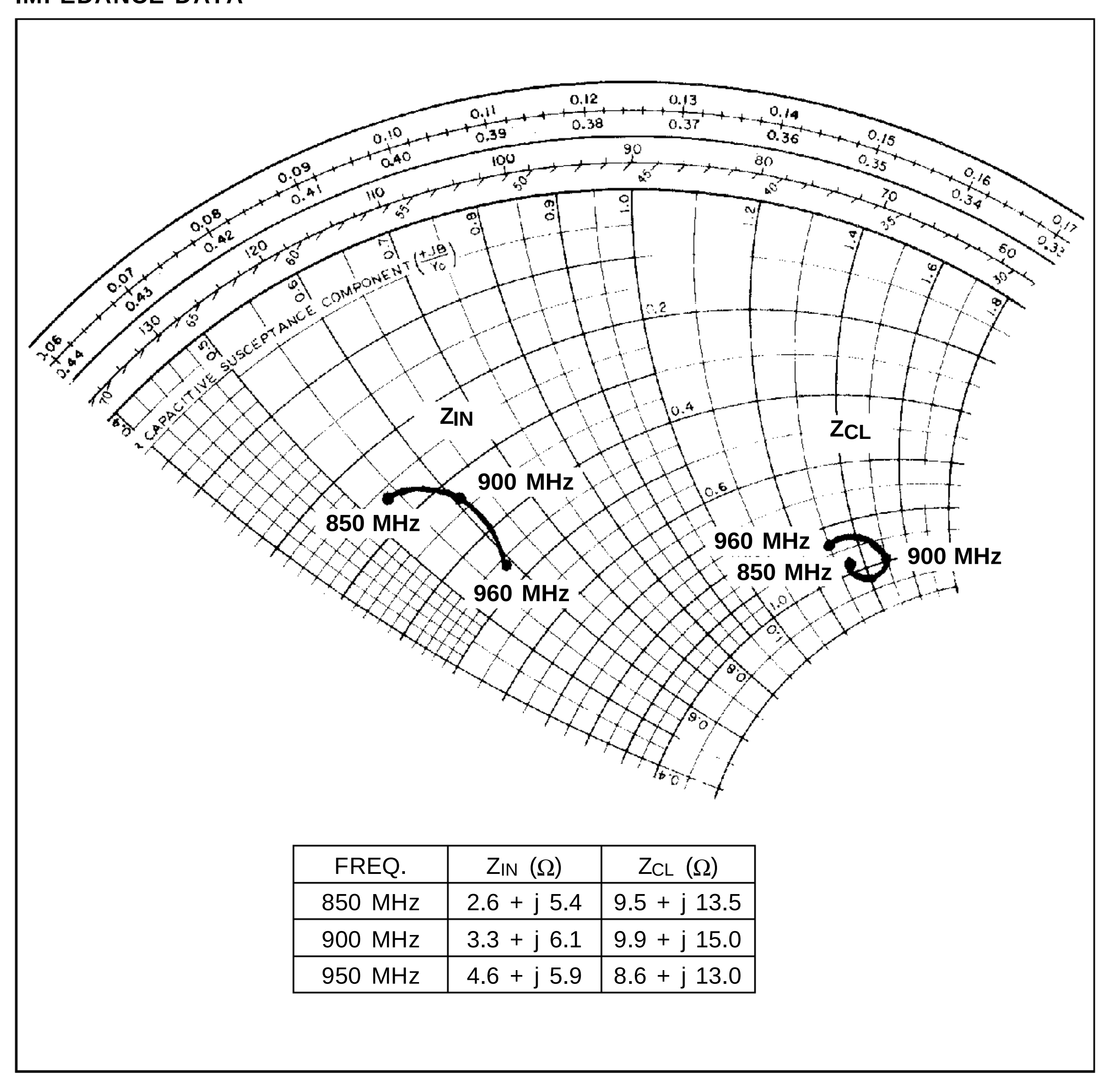
**CLASS AB BROADBAND OUTPUT POWER vs INPUT POWER**




**OUTPUT POWER vs INPUT POWER**

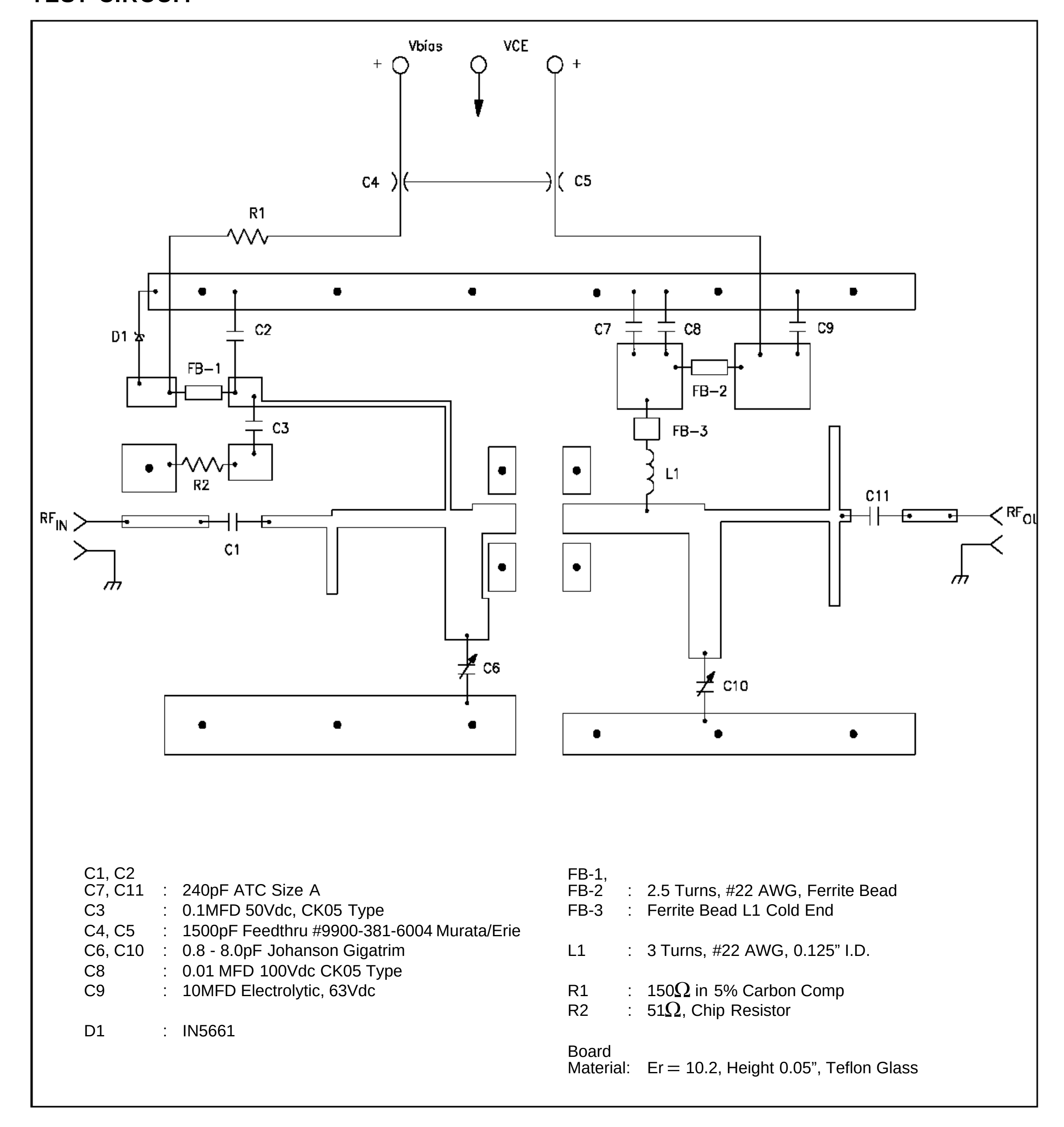


## IMPEDANCE DATA

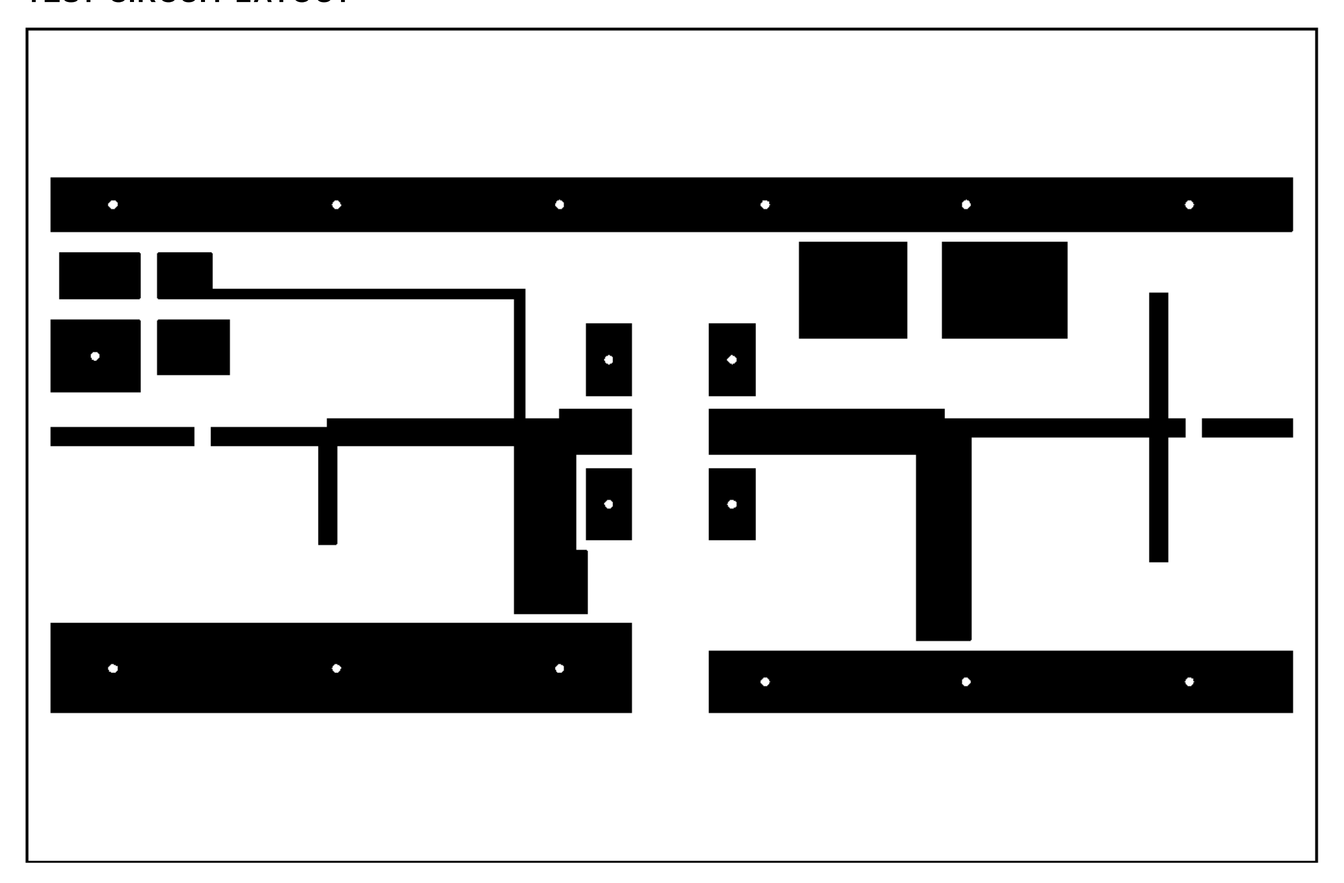



| FREQ. | $Z_{IN}$ (Ω) | $Z_{CL}$ (Ω) |
|---|---|---|
| 850 MHz | 2.6 + j 5.4 | 9.5 + j 13.5 |
| 900 MHz | 3.3 + j 6.1 | 9.9 + j 15.0 |
| 950 MHz | 4.6 + j 5.9 | 8.6 + j 13.0 |

## TEST CIRCUIT



## TEST CIRCUIT LAYOUT



## PACKAGE MECHANICAL DATA

Ref.: Dwg. No.12-0142

| SGS-THOMSON MICROELECTRONICS | | |
|---|---|---|
| | MINIMUM Inches/mm | MAXIMUM Inches/mm |
| A | .355/9,02 | .365/9,27 |
| B | .115/2,92 | .125/3,18 |
| C | .075/1,91 | .085/2,16 |
| D | .225/5,72 | .235/5,97 |
| E | .090/2,29 | .110/2,79 |
| F | .720/18,29 | .730/18,54 |
| G | .970/24,64 | .980/24,89 |
| H | .355/9,02 | .365/9,27 |
| I | .004/0,10 | .006/0,15 |
| J | .120/3,05 | .130/3,30 |

| CONT'D | | |
|---|---|---|
| | MINIMUM Inches/mm | MAXIMUM Inches/mm |
| K | .160/4,06 | .180/4,57 |
| L | .230/5,84 | .260/6,60 |





